

polishing fluid disposed on the first portion has a greater volume as it interfaces with a substrate being polished than the polishing fluid disposed on the second portion.

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- b 25. (Currently Amended) The method of claim 23 further comprising:  
flowing the polishing fluid on the pad at one or more locations between the first portion and the second portion.
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### REMARKS

This response is intended as a full and complete response to the Office Action mailed on February 11, 2003. In view of the amendments presented above and the following discussion, the Applicants believe that all claims are now in allowable form.

### **CLAIM AMENDMENTS**

Claims 23 and 25 have been amended to correct minor typographical errors and have not changed in either scope or meaning.

### **CLAIM REJECTIONS**

#### **A. 35 U.S.C. §102(e) Claims 1-5, 7-9, 16-21, 23-25, 30-34 and 36**

Claims 1-5, 7-9, 16-21, 23-25, 30-34 and 36 stand rejected under 35 U.S.C. §102(e) as being anticipated by United States Patent No. 6,398,627, issued June 4, 2002 to *Chiou, et al.* ("*Chiou*"). The Applicants respectfully disagree.

In response, the Applicants submit that they conceived of and reduced to practice the claimed invention on or before March 22, 2001, the filing date of *Chiou*. In support of this submission, the Applicants enclose a declaration under 37 C.F.R. §1.131, executed by the inventors B. Withers and B. Meng, that declares a conception and reduction to practice date for the invention claimed in the above-identified patent application to be on or before March 22, 2001. In view of this declaration, the Applicants respectfully request that the rejection to claims 1-5, 7-9, 16-21, 23-25, 30-34 and 36 based on *Chiou* be withdrawn.

**B. 35 U.S.C. §103(a) Claims 1-25, 30-33, and 35-39**

Claims 1-25, 30-33, and 35-39 stand rejected under 35 U.S.C. §103(a) as being unpatentable over United States Patent No. 5,679,063, issued October 21, 1997 to *Kimura, et al.* ("*Kimura*") in view of United States Patent No. 5,816,900, issued October 6, 1998 to Nagahara, et al. ("*Nagahara*"). The Applicants respectfully disagree.

The burden for establishing a prima facie case of obviousness falls on the Examiner. See, *MPEP* §2142. A basic requirement of establishing a prima facie case of obviousness is that the combination of prior art references must teach or suggest all the claim limitations and that there must be a motivation to combine the references. See, *MPEP* §2143.

*Kimura* teaches a polishing apparatus for polishing the surface of an object which supplies a polishing solution of different concentrations along a radial direction of a polishing cloth. (See, *Kimura*, Abstract) The creation and utilization of the concentration gradient is critical to the objective of the *Kimura* – "fine tuning of the rate of removal of the surface material of the object by adjusting the concentrations of the polishing solution..." (See, *Kimura*, col. 2, ll. 11-13) – thus teaching away from utilizing a polishing fluid with a uniform concentration as recited by claims 1-25, 30-33, and 35-39. Therefore, *Kimura* may not be utilized in combination with any other reference to render the claimed invention obvious.

Additionally, *Nagahara* teaches delivering a polishing fluid through a polishing pad at dissimilar flow rates. For example, by providing polishing fluid with sufficient force through the pad to the outer perimeter of the substrate, the polishing rate at the substrate's perimeter will increase to offset the normally higher polishing rate at the substrate's center due to higher contact forces at the substrate's center as the substrate is pressed against the polishing pad. See, *Nagahara*, column 5, lines 40-56. Thus, *Nagahara* teaches forcibly applying polishing fluid through the polishing pad to counteract the higher contact forces at the substrate's center. This result cannot be achieved by dispensing polishing fluid through a fluid delivery arm, and therefore, *Nagahara* teaches away from utilizing a polishing fluid delivery arm to provide polishing fluid as recited by claims 1-25, 30-33, and 35-39.

As *Kimura* and *Nagahara* teach away from each other, *Kimura* and *Nagahara* cannot be combined to teach or suggest a polishing fluid delivery arm that provides polishing fluid of equal concentration as recited by the claimed invention. Thus, claims 1-25, 30-33, and 35-39 are patentable over *Kimura* in view of *Nagahara*. Accordingly, the Applicants respectfully request the rejection to claims 1-25, 30-33, and 35-39 be withdrawn.

**C. 35 U.S.C. §103(a) Claims 26 and 27**

Claims 26 and 27 stand rejected under 35 U.S.C. §103(a) as being unpatentable over *Kimura* in view of *Nagahara* as applied to claim 23 above, further in view of United States Patent No. 5,433,650, issued July 18, 1995 to Winebarger ("*Winebarger*"). The Applicants respectfully disagree.

*Kimura* in view of *Nagahara*, and further in view of *Winebarger* does not recite all of the limitations contained in claims 26 and 27. As discussed above, *Kimura* and *Nagahara* cannot combine to teach or suggest all of the limitations described in claim 23, from which claims 26 and 27 depend. *Winebarger* teaches a method for polishing a substrate in which the polishing rate of the substrate is automatically adjusted during the polishing process. In one embodiment, *Winebarger* describes a closed loop polishing process in which the polishing rate is automatically adjusted by modifying the frequency at which slurry is dispensed onto the polishing surface or the quantity of slurry that is dispensed. *Winebarger*, column 4, lines 24-26. However, *Winebarger* does not teach or suggest flowing a polishing fluid at a first location at a first rate and flowing a polishing fluid of equal concentration at a second location at a second rate that is different from the first rate, as recited by claim 23, from which claims 26 and 27 depend. Therefore, the addition of *Winebarger* to *Kimura* and *Nagahara* does not teach or suggest all of the limitations recited by claims 26 and 27.

Thus, claims 26 and 27 are patentable over *Kimura* in view of *Nagahara*, and further in view of *Winebarger*. Accordingly, the Applicants respectfully request the rejection to claims 26 and 27 be withdrawn.

**D. 35 U.S.C. §103(a) Claim 34**

Claim 34 stands rejected under 35 U.S.C. §103(a) as being unpatentable over *Kimura* in view of *Nagahara* as applied to claim 31 above, further in view of United States Patent No. 6,139,406, issued October 31, 2000 to Kennedy ("*Kennedy*"). The Applicants respectfully disagree.

*Kimura* in view of *Nagahara*, and further in view of *Kennedy* does not recite all of the limitations recited by claim 34. As discussed above, *Kimura* and *Nagahara* cannot combine to teach or suggests all of the limitations described in claim 31, from which claim 34 depends. *Kennedy* teaches a combined slurry and rinse arm in which a slurry delivery line or multiple slurry delivery lines are disposed within the arm. However, *Kennedy* does not teach or suggest different volumes of polishing fluid of equal concentration disposed on a polishing material when contacting the substrate positioned on the polishing material as recited by claim 31, from which claim 34 depends. Therefore, the addition of *Kennedy* to *Kimura* and *Nagahara* does not teach or suggest all of the limitations recited by claim 34.

Thus, claim 34 is patentable over *Kimura* in view of *Nagahara*, and further in view of *Kennedy*. Accordingly, the Applicants respectfully request the rejection to claim 34 be withdrawn.

**E. 35 U.S.C. §103(a) Claims 10-14**

Claims 10-11 stand rejected under 35 U.S.C. §103(a) as being unpatentable over *Chiou* in view of *Applicant's Admitted Prior Art* ("AAPA"). Claims 12-14 stand rejected under 35 U.S.C. §103(a) as being unpatentable over *Chiou*. The Applicants respectfully disagree.

As discussed above, *Chiou* is not prior art with respect to this application. Neither the AAPA nor the knowledge of one skilled in the art teaches or suggests a first nozzle and at least a second nozzle adapted to flow polishing fluid of equal concentration at different rates such that the first nozzle dispenses a greater volume of polishing fluid on a first portion of the polishing surface as it interfaces with the substrate than the second nozzle as recited by claim 1, from which claims 10-14 depend.

Thus, claims 10-14 are patentable over *Chiou* both alone and in combination with the *AAPA*. Accordingly, the Applicants respectfully request the rejection to claims 10-14 be withdrawn.

**F. 35 U.S.C. §103(a) Claims 15, 22, 26, 27, and 39**

Claims 15, 22, 26, 27, and 39 stand rejected under 35 U.S.C. §103(a) as being unpatentable over *Chiou* in view of *Winebarger*. The Applicants respectfully disagree.

As discussed above, *Chiou* is not prior art with respect to this application. *Winebarger* has also been discussed above. *Winebarger* does not teach or suggest a first nozzle and at least a second nozzle adapted to flow polishing fluid of equal concentration at different rates such that the first nozzle dispenses a greater volume of polishing fluid on a first portion of the polishing surface as it interfaces with the substrate than the second nozzle as recited by claim 1, from which claim 15 depends.

In addition, *Winebarger* does not teach or suggest a first nozzle disposed on a delivery portion of an arm and adapted to flow a polishing fluid at a first rate to a first portion of the polishing surface and at least a second nozzle disposed on the delivery portion of the arm and adapted to flow the polishing fluid at a second rate that is different than the first rate as recited by claim 19, from which claim 22 depends.

Furthermore, *Winebarger* does not teach or suggest flowing a polishing fluid at a first location at a first rate and flowing a polishing fluid of equal concentration at a second location at a second rate that is different from the first rate, as recited by claim 23, from which claims 26 and 27 depend.

Finally, *Winebarger* does not teach or suggest a first zone defined the polishing material having a first volume of polishing fluid disposed thereon and a second zone defined on the polishing material radially inward of the first zone and having a volume of polishing fluid disposed thereon that is different than a volume of polishing fluid of the same concentration disposed on the first zone when contacting

the substrate positioned on the polishing material as recited by claim 31, from which claim 39 depends.

Thus claims 15, 22, 26, 27, and 39 are patentable over *Chiou* in view of *Winebarger*. Accordingly, the Applicants respectfully request the rejection to claims 15, 22, 26, 27, and 39 be withdrawn.

### **CONCLUSION**

Thus, the Applicants submit that all claims now pending are in condition for allowance. Accordingly, both reconsideration of this application and swift passage to issue are earnestly solicited.

If the Examiner believes that any unresolved issues still exist, it is requested that the Examiner telephone Keith Taboada at (732) 530-9404 so that appropriate arrangements can be made for resolving such issues as expeditiously as possible.

Respectfully submitted,

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**APPENDIX I**  
**MARK-UP OF AMENDED CLAIMS**

23. (Currently Amended) A method of supplying a polishing fluid to a chemical mechanical polishing surface comprising:

flowing polishing fluid onto a first portion of a rotating polishing pad [at a first location] at a first rate; and

flowing polishing fluid of equal concentration on a second portion of the polishing pad [at a second location] at a second rate that is different than the first rate, wherein the polishing fluid disposed on the first portion has a greater volume as it interfaces with a substrate being polished than the polishing fluid disposed on the second portion.

25. (Currently Amended) The method of claim 23 further comprising:

flowing the polishing fluid on the pad at one or more locations between the first portion [location] and the second portion [location].